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TITLE: LASER ABLATION OF WAVEGUIDE STRUCTURES

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AMENDED CLAIMS

1. (currently amended) A method of processing an optical device incorporating a waveguide with a core, the method comprising ~~the step of:~~

~~utilizing a laser to heat and thereby ablate a surface of the device so as to induce a stress in said optical device and thereby alter an optical characteristic of the waveguide, wherein the power density of the laser is selected to effect surface ablation~~ selecting an optical characteristic of the core of the waveguide and a desired value or property of the selected optical characteristic;

ablating a surface of the optical device by means of a laser without ablating the core of the waveguide, the power density of the laser being selected to effect surface ablation of the optical device; and

controlling the ablating of the surface so that the selected optical characteristic is modified so as to assume the desired value or property.

2. (original) A method as claimed in claim 1, wherein the laser comprises a carbon dioxide laser source.

3. (currently amended) A method as claimed in claim 1, wherein the

~~method is utilized to alter~~ selected optical characteristics comprises the birefringent properties of the core of the waveguide.

4. (currently amended) A method as claimed in claim 3, wherein the desired property of the selected optical characteristic comprises the substantial alignment of the TM and TE birefringent modes ~~are substantially aligned by the method~~.

5. (currently amended) A method as claimed in claim 1, further comprising ~~the step of~~ masking the surface with a thermally conductive material having an aperture defined to minimise exposure of the device to the laser.

6. (currently amended) A method as claimed in claim 1, wherein the optical device comprises a sensor.

7. (currently amended) A method as claimed in claim 1, further comprising ~~the step of~~ depositing a material layer on the surface.

8. (currently amended) A method as claimed in claim 7, wherein ~~the step of~~ depositing the material layer comprises depositing the material layer on portions of the surface affected by the ~~ablation~~ ablating of the surface.

9. (currently amended) A method as claimed in claim 1, further comprising ~~the step of~~ mounting a further component in a groove formed in the surface as a result ~~of the ablation~~ of the ablating of the surface.

10. (currently amended) A method as claimed in claim 7, wherein the material layer is provided as an electrode for electrically contacting the optical device.

11. (currently amended) A method as claimed in claim 9, wherein the further component comprises a modulator for modulating a characteristic of the optical device.

12. (currently amended) A method as claimed in claim 1, wherein the ~~step of utilising the laser to heat~~ ablating of the surface of said optical device is conducted at different locations of the device so as to form an optical structure.

13. (original) A method as claimed in claim 12, wherein the optical structure comprises a grating structure.

14. (currently amended) A method as claimed in ~~claims 12~~ claim 12, wherein the optical structure comprises a polarisation filter.

15. (currently amended) A method as claimed in claim 1, wherein the method is used to diminish UV induced changes present in the core of ~~the~~ waveguide.

16. (currently amended) A method as claimed in claim 1, wherein the optical device comprises an optical fibre.

17. (currently amended) A method as claimed in claim 1, wherein the method is utilised to mark the optical device by way of the ~~ablation~~ ablating of the surface.

18. (currently amended) A method as claimed in claim 1, wherein the laser comprises a semiconductor laser operating at a wavelength of more than about 1.8 ~~micro metre~~ micrometer.

19. (currently amended) A method as claimed in claim 18, wherein the surface of the optical device comprises SiO_2.

20. (currently amended) A method as claimed in claim 1, ~~wherein the method~~ further ~~comprises the step of~~ comprising providing an absorber material to facilitate the heating of the surface of the optical device.

21. (withdrawn and currently amended) An optical device incorporating a waveguide with a core, wherein the ~~waveguide~~ optical device has been processed ~~utilising a laser to heat and thereby ablate a surface of the device so as to induce a stress in said device and thereby alter an optical characteristic of the waveguide, wherein the power density of the laser is selected to effect ablation~~ by a method comprising:

selecting an optical characteristic of the core of the waveguide and a desired value or property of the selected optical characteristic;

ablating a surface of the optical device by means of a laser without ablating the core of the waveguide, the power density of the laser being selected to effect surface ablation of the optical device; and

controlling the ablating of the surface so that the selected optical characteristic is modified so as to assume the desired value or

property.

22. (new) A method as claimed in claim 1, further comprising determining a suitable ablating of the surface of the optical device by ablating the surface of the optical device or of a comparable device and determining the selected optical characteristic a plurality of times.

23. (new) A method as claimed in claim 22, including alternately ablating the surface and determining the selected optical characteristic until the selected optical characteristic has the desired value or property.

24. (new) A method as claimed in claim 22, including ablating a plurality or portions of the surface to different extents.

25. (new) A method as claimed in claim 1, wherein the ablating of the surface of the optical device introduces a compensating stress for compensating for an effect of stress on the core of the waveguide introduced during the manufacture of the optical device.